

REMARKS/ARGUMENTS

In the Office Action mailed August 23, 2004, claims 20-24 were rejected under 35 U.S.C. § 112. Claim 1 was rejected under 35 U.S.C. § 102(b) as being anticipated by Kurz (4,348,178). Claims 2 and 3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kurz (4,348,178). Claims 4-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kurz (4,348,178) in view of Acevedo (3,983,628). Claims 20-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kurz (4,348,178) in view of Acevedo (3,983,628), and in further view of Duret et al (4,611,288). Claims 1-24 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over U.S. Patent No. 5,975,893. In view of the remarks below, applicants submit that all claims are in a condition for allowance.

The Section 112 Rejections

Claims 20-24 were rejected under 35 U.S.C. § 112. Applicants have amended the claims in response to the rejections. Withdrawal of the § 112 rejections is respectfully requested.

The Section 102 Rejection

Claim 1 was rejected under 35 U.S.C. § 102(b) as being anticipated by Kurz (4,348,178). The Office Action noted that:

"Kurz teaches that it is known to make an appliance using a model of the teeth in a position, column 1, lines 15-40, and that the present invention of Kurz makes use of such tooth positioner mouth pieces, column 1, lines 50-51, and further teaches using a plurality of such mouth pieces, column 3, lines 22-47. The disclosed model of teeth of Kurz is inherently predetermined by the position of the patient's teeth used to make the positioner."

Kurz fails to show at least the digitally modeling a set of teeth in a predetermined position. Since at least one element is missing, the Section 102 rejection is improper. Withdrawal of the § 102(b) rejection is respectfully requested.

The Section 103 Rejections

Claims 2 and 3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kurz (4,348,178). The Office Action noted that:

"Kurz teaches that it is known to make an appliance using a model of the teeth in a position, column 1, lines 15-40, and that the present invention of Kurz makes use of such tooth positioner mouth pieces, column 1, lines 50-51, and further teaches using a plurality of such mouth pieces, column 3, lines 22-47. The disclosed model of teeth of Kurz is inherently predetermined by the position of the patient's teeth used to make the positioner. Kurz further teaches a method of using a model to generate one appliance and teaches using a plurality of such appliances, therefore, it would be obvious to one of ordinary skill in the art to use a model when generating each of the plurality of appliances. The change for each positioner is inherently predetermined by the position of the patient's teeth when making the models. As to claim 3, the plaster models of Kurz are held to be casts made from molds as is known in the art."

Applicants respectfully traverse the rejection. Although Kurz mentions that a plurality of positioners can be used to treat the patient, Kurz fails to show the specifics of modeling a set of teeth in **three or more predetermined positions prior to treatment** and generating an appliance for each of the three or more predetermined positions prior to treatment.

To establish *prima facie* obviousness, three basic criteria must be met. M.P.E.P. § 2142. First, the Examiner must show some suggestion or motivation, either in Kurz or in the knowledge generally available to one of ordinary skill in the art, to modify the reference so as to produce the claimed invention. M.P.E.P. § 2143.01; *In re Fine*, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Secondly, the Examiner must establish that there is a reasonable expectation of success for the modification. M.P.E.P. § 2142. Thirdly, the Examiner must establish that the prior art references teach or suggest all the claim limitations. M.P.E.P. §2143.03; *In re Royka*, 180 U.S.P.Q. 580 (CCPA 1974). The teachings, suggestions, and reasonable expectations of success must be found in the prior art, rather than in appellant's disclosure. *In re Vaeck*, 20 U.S.P.Q.2d 1438 (CAFC 1991). Appellant respectfully submits that a *prima facie* case of obviousness has not been met because the Examiner's rejection fails on each of the above requirements.

Additionally, the Office Action notes that "the change for each positioner is inherently predetermined by the position of the patient's teeth when making the models." Applicants note that the Examiner must provide rationale or evidence tending to show inherency. M.P.E.P. § 2112. The fact that a certain result may occur in the prior art is not sufficient to establish inherency of that result. *Id.* As the court noted in *In Re Roberston*, 49 U.S.P.Q.2d 1949, 1950-51 (Fed. Cir. 1999)

"To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and that it would be so recognized by persons of ordinary skill. Inherence, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient."

In the instant case, the Examiner has not provided any rationale or evidence in Kurz showing modeling a set of teeth in **three or more predetermined positions prior to treatment** and generating an appliance for each of the three or more predetermined positions prior to treatment.

In sum, Kurz fails to show the specifics of modeling the teeth in three or more predetermined positions prior to treatment. Withdrawal of the rejection is requested.

Claims 4-19 were rejected under 35 U.S.C. § 103 as being unpatentable over Kurz (4,348,178) as applied to claims 1-3 above, and further in view of Acevedo (3,983,628). The Office Action noted that:

"Kurz does not show using an ideal set of teeth. Acevedo teaches that it is known to use an ideal arch when calculating desired positions for teeth, column 4, lines 16-27. It would be obvious to one of ordinary skill in the art to modify Kurz to include the use of an ideal set of teeth as shown by Acevedo in order to better obtain the desired prescription for moving teeth. As to claim 5, Kurz teaches the use of models, which is well known in the art to use with articulators to best determine bite and proper tooth position, however, does not show using a masticatory system. Acevedo teaches using a masticatory system in the form of an articulator to register models. It would be obvious to one of ordinary skill in the art to modify Kurz to include a masticatory system as shown by Acevedo to better

determine the desired position of the teeth. As to claims 6 and 7, the use of X-ray and computer tomography are conventional in the art, see the present disclosure, paragraph [0044], and therefore, would be obvious to the skilled artisan for determining occlusion. As to claim 9, the motion of the articulator of Acevedo is inherently applying kinematics. As to claim 10, the motion of the articulator of Acevedo is inherently constrained as shown. As to claims 11-13, avoiding and minimizing undesirable contacts would be obvious in order to best move the teeth to one of ordinary skill in the art. As to claim 14, the method of determining undesirable contacts is an obvious matter of choice in calculations used by the skilled artisan. As to claim 15, to call the motions allowed by an articulator a "library" is an obvious matter of choice in terminology to one of ordinary skill in the art. As to claims 16 and 17, it is well known to simulate protrusive and lateral motions on an articulator. "

The Acevedo procedure is as follows: Stage A: The coronal assemblies of the Orthodontic Study Model are provided with the stone models of the crowns of the upper and lower teeth of the patient; Stage B: The completed coronal assemblies of Stage A are coupled to a bite registration guide in the Orthodontic Study Model to form a triad of upper and lower models with the bite registration guide; and, Stage C: The triad obtained in Stage B, consisting of coronal assemblies coupled to a bite registration and mounted on the Orthodontic Study Model, is now mounted in a geared articulator. In the mounted position the triad assembly is an accurate reproduction of the orthodontic parameters of the patient's dentition and serves as a basis for charting future movements of each of the teeth in x, y and z directions.

As discussed above, neither Kurz nor Acevedo shows modeling a set of teeth in **three or more predetermined positions prior to treatment** and generating an appliance for each of the three or more predetermined positions prior to treatment. Moreover, with respect to the dependent claims, there is no showing of registration of the model with X-ray, CT data, or a mechanical model. Additionally, there is no showing of applying kinematics to the model or applying a constrained motion to the model. There is no mentioning of Peer Assessment Rating metrics, and there is no library of motions present in either Kurz or Acevedo. Hence, claims 2-19 are patentable over Kurz and Acevedo, singly or in combination. Withdrawal of the rejection is requested.

Claims 20-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kurz (4,348,178) in view of Acevedo (3,983,628) as applied to claim 5 above, and further in view of Duret et al (4,611,288). The Office Action noted that:

"The above combination does not show using computer models, scanning and the use of features. Duret teaches using computer models to determine occlusion, using scanning, Figs. 10-13, and using features, column 6, lines 3-8. It would be obvious to one of ordinary skill in the art to modify the above combination to include the use of digital methods as shown by Duret in order to best model the teeth. The above teaching of Kurz to make plural appliances, implies that a new prescription is needed for each."

Duret relates to automatic production of dental prostheses, such as crowns, inlays or dentures based upon an optical impression taken of the oral region with nontraumatic radiation. The reflected waves are transformed into numerical data which is used directly to operate a numerically controlled machine in the fabrication process.

Again, Applicants respectfully submit that a *prima facie* case of obviousness has not been met because the Examiner's rejection fails on at least two of the above requirements, namely that the parent claim limitations of modeling a set of teeth in **three or more predetermined positions prior to treatment** and generating an appliance for each of the three or more predetermined positions prior to treatment are not met. Further, Kurz, Acevedo, and Duret, singly or in combination does not show the library of motion. Additionally, none of the references shows matching a second teeth model with a first teeth model and applying a position transform to the second teeth model. Moreover, none of the references shows matching correspondences between the models, and none shows the specifics of feature correspondences. None of the references shows adjusting the position of teeth based on new information such as new prescription.

In sum, claims 20-24 are patentable over the references. Withdrawal of the § 103 rejections is respectfully requested.

The Double Patenting Rejection

A Terminal Disclaimer is submitted herewith. Applicants submit that the terminal disclaimer overcomes the double patenting rejection and that all claims are in condition for allowance. The Terminal Disclaimer also cites recently issued parent patent no. 6,786,721.

As a final matter, Applicants note that a Supplemental Information Disclosure Statement is being filed together with this Amendment.


CONCLUSION

In view of the above amendments and remarks, Applicants believe that the above-referenced application is in condition for allowance and request that it be passed to issue at an early date. The amendments to the specification and drawings correct typographical errors only. No new material has been added.

If for any reason the Examiner believes that a telephone conference would in any way expedite prosecution of the subject application, the Examiner is invited to telephone the undersigned at (650) 326-2400.

Respectfully submitted,

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Attachments: *Terminal Disclaimer*
Supplemental Information Disclosure Statement

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Amendments to the Drawings:

The attached sheet of drawings includes changes to **Fig. 2B**. This sheet, which includes Fig. 1 and Figs. 2B - 2C replaces the original sheet including Fig. 2b.

The attached sheet of drawings includes changes to **Fig. 3**. This sheet, which includes Figs. 3-4 replaces the original sheet including Fig. 3.

The attached sheet of drawings includes changes to **Figs. 5 and 6**. This sheet, which includes Figs. 5-6 replaces the original sheet including Figs. 5 and 6.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

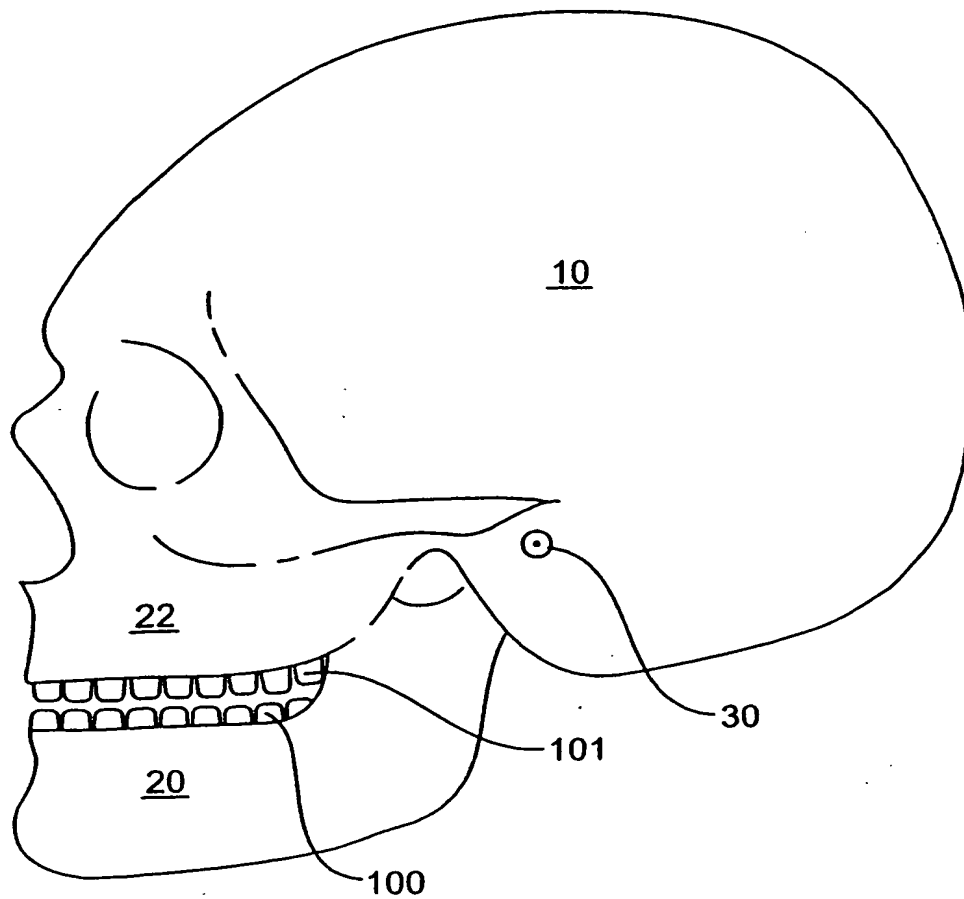


FIG. 1

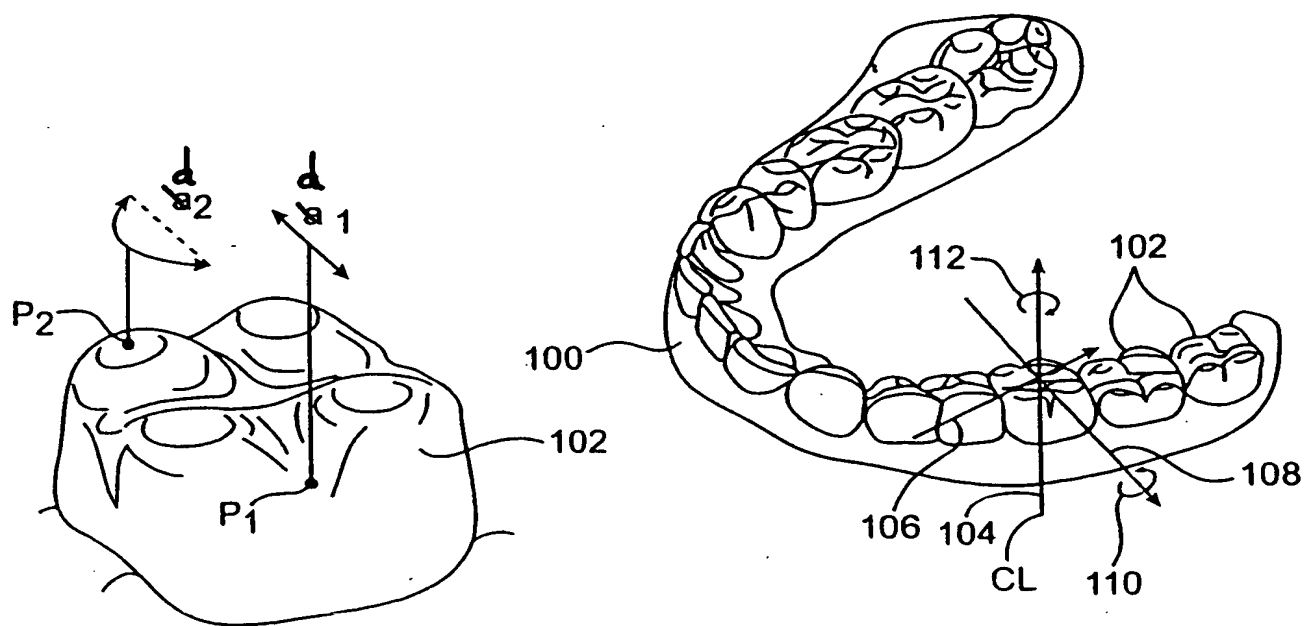
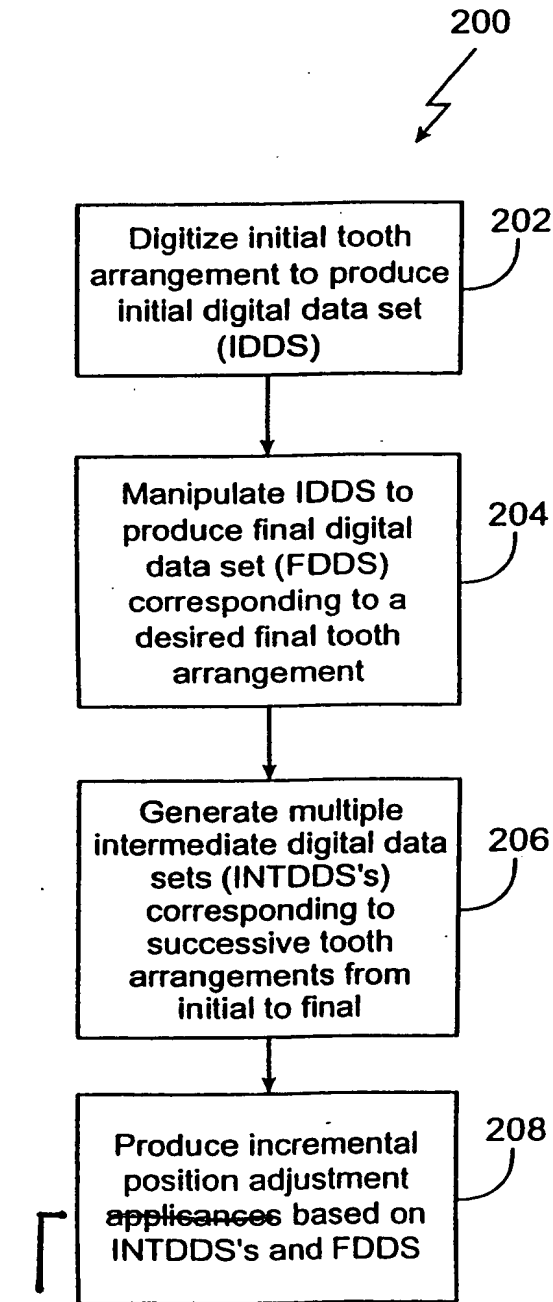


FIG. 2B

FIG. 2A



appliances

FIG. 3

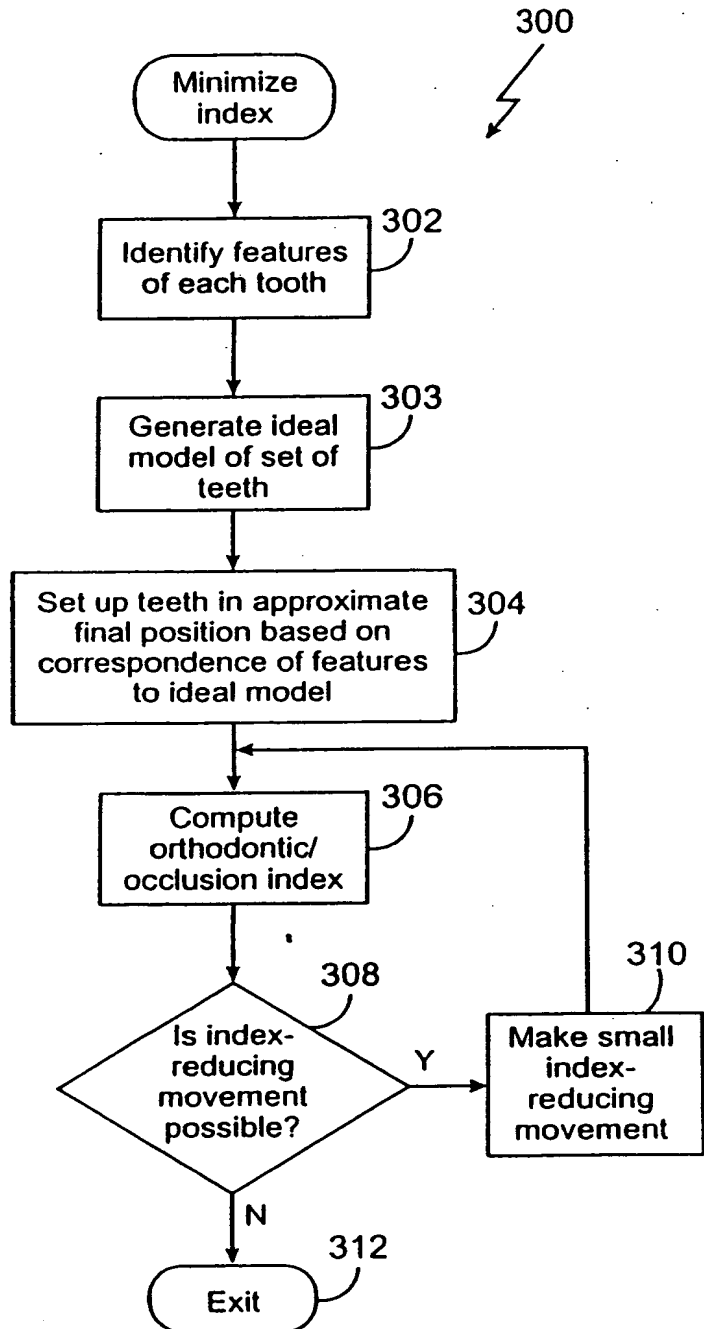


FIG. 4

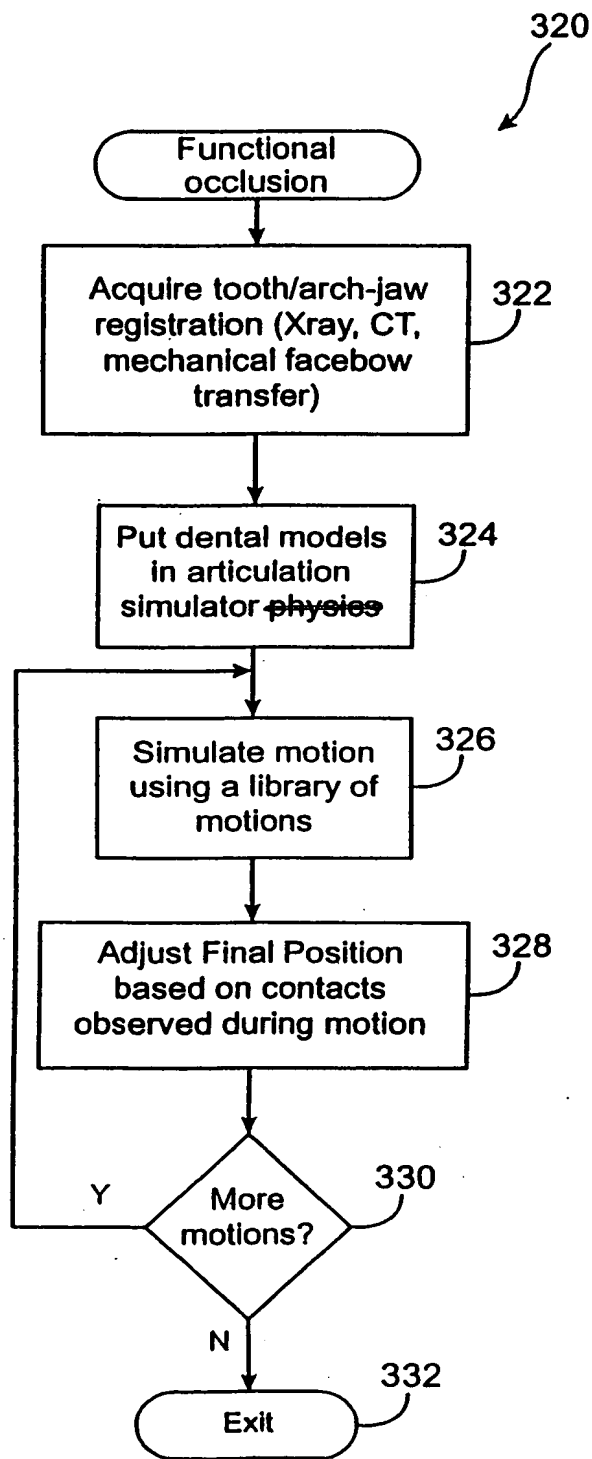


FIG. 5

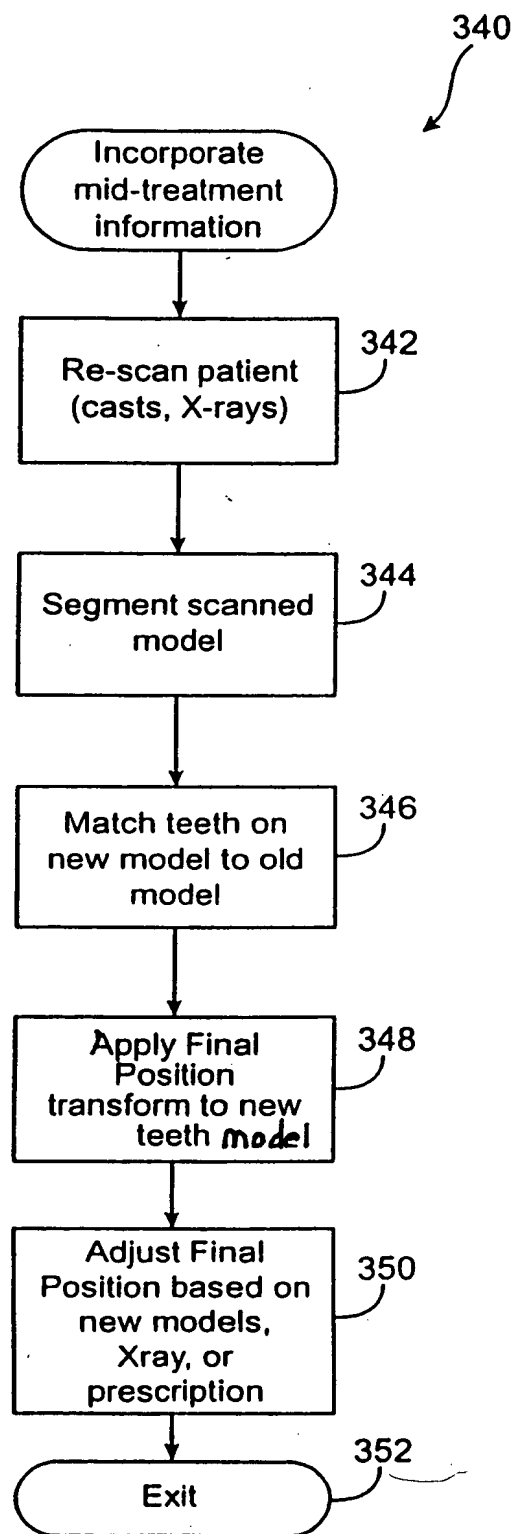


FIG. 6